

CRUSH INJURY SYNDROME

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Prolonged compression of extensive areas of the body and/or limb(s) for 1 hour or more may result in crush injury syndrome, requiring unique prehospital treatment.

1. Take spinal precautions, if indicated.
 2. Administer high flow O₂.*
 3. Apply cardiac monitor.
 4. Establish 2 large bore IV/IO of NS, if possible.
 5. If shock is present, run fluids wide open and titrate to maintain a systolic BP of 90.
 6. In general, IV fluids and medical therapy should be initiated prior to the release of compression. However, the release of compression to the chest should not be delayed for the establishment of IV and the initiation of medical treatment.
 7. Initiate the following treatment prior to the release of compression:
 - I. Administer 1000cc IV/IO bolus of NS. Continue to administer NS at 500 ml/hr, even if the patient is normotensive, unless the patient becomes markedly hypertensive and/or develops **pulmonary edema**.
 - II. Administer sodium bicarbonate (NaHCO₃) at 1 meq/kg IVP/IO and/or 10% calcium gluconate 20 ml IV/IO slowly over 1-2 minutes.
 - III. Administer 5 mg of **albuterol (Ventolin®)** in 6 ml NS using small volume nebulizer.
 8. If the patient has hypotension and **bradycardia** associated with EKG evidence of hyperkalemia[†], initiate the following treatment:
 - I. Administer 10% calcium gluconate 20 ml IV/IO slowly over 1-2 minutes.[‡]
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- II. Administer 5mg of Ventolin® in 6 ml NS using small volume nebulizer.
- III. Administer NaHCO₃ at 1 mEq/kg IVP/IO.

*If OSI is indicated, avoid the administration of [succinylcholine](#). If paralysis is necessary to manage the airway, Medical Control shall be contacted to consider the use of [vecuronium bromide \(Norcuron®\)](#).

†EKG findings associated with hyperkalemia include tall peaked T waves, a prolonged QRS complex, and sometimes the disappearance of P and/or T waves. Complete heart block or asystole may occur.

‡If calcium gluconate is not available, calcium chloride may be substituted at a lower volume. Slowly administer 5-10 ml of a 10% solution (0.5-1 gm) over 1-2 minutes..